REMARKS

Claims 1 through 24 are pending in the application.

Claim 1 has been amended to emphasize advantageous inventive food casings comprising polyamide and/or copolyamide . Support for this amendment can be found in the Application as filed, for example in Claim 3 as-filed as well as on Page 8, lines 14 through 23.

Claim 1 has also been amended to delete the phrase "wherein the anti-microbial properties are imparted to the food casing by the metal salt alone." Support for this amendment can be found in the Application as filed, for example at Page 2, lines 16 through 22 and Page 8, lines 14 through 27.

Claim 3 has been canceled, as its subject matter has been incorporated into Claim 1.

Claim 23 has been amended to incorporate a portion of its subject matter within Claim 24.

Claim 23 has further been amended to depend from Claim 24.

Claim 24 has been amended to reflect advantageous embodiments in which the food casing has not been subjected to an anti-microbial after-treatment. As noted above, support for this amendment can be found in the Application as filed, for example in Claim 23.

Claim 24 has further been amended to depend from Claim 1.

Applicants respectfully submit that this response does not raise new issues, but merely places the above-referenced application either in condition for allowance, or alternatively, in better form for appeal. Reexamination and reconsideration of this application, withdrawal of all rejections, and formal notification of the allowability of the pending claims are earnestly solicited in light of the remarks which follow.

Section 112 Rejection

Claim 1 stands rejected over the phrase "said antimicrobial properties are imparted to the food casing by said metal salt alone." Without addressing the merits of the rejection and solely to advance the prosecution of the case, the foregoing phrase has been canceled.

Accordingly, Applicant respectfully requests withdrawal of this rejection.

The Claimed Invention is Patentable
in Light of the Art of Record

Claims 1, 2, 7 through 9, 11 through 14 and 18 stand rejected as anticipated by United States Patent No. 5,094,847 to Yazaki et al. (US 847). Claims 15, 16, 23 and 24 stand rejected under 35 U.S.C. 103(a) in light of US 847. Claims 3 through 6, 10, and 19 stand rejected over US 847 in view of United States Patent No. 6,517,920 to Schroder et al. (US 920). Claim 17 stands rejected over US 847 in view of US 920 and further in view of United States Patent No. 4,635,316 to Towne et al. (US 316). Claims 20 through 22 stand rejected over US 847 in view of Japanese Publication No. JP 09-057923 to Iwao et al. (JP 923).

It may be useful to briefly consider the invention before addressing the merits of the rejection.

There is a need in the art for thermoplastic food casings having improved antimicrobial properties. In contrast to traditional viscose food casings, thermoplastic food casings are subjected to an extrusion process in which polymer is heated to the melt and forced through a die. Unfortunately, many conventional antimicrobials, such as those used with viscose casings, suffer from heat sensitivity. Thermoplastic food casings to date have thus included an antimicrobial coating or after-treatment that is applied after extrusion. Such coatings suffer from leaching and require an extra processing step. (In this regard, the Examiner's attention is kindly directed to the Application-as-filed on Page 1, line 7 through Page 2, line 30).

Surprisingly, Applicant has found that metal salts may be added to the polymer melt in antimicrobially active amounts before casing extrusion. In the finished casing, the metal salts release antimicrobially active metal ions that prevent or impede the growth of mold, bacteria, yeast, fungi and other microorganisms. In particularly advantageous embodiments, the casings are polyamide and/or copolyamide.

Accordingly, the claims are directed to synthetic-based antimicrobial food casing in which at least one of the layers includes an antimicrobially active amount of at least one metal salt and A and polyamide and/or copolyamide, as recited in the claims as-amended.

In advantageous embodiments, the metal salt is present in the inventive casings in an amount ranging from about 0.005 to 2.0% by weight and the antimicrobial properties have been imparted without subjecting the food casing to an anti-microbial after-treatment, as recited in Claim 24 as-amended.

In especially beneficial aspects of such embodiments, the inventive food casings exhibit a bacteriostatic activity of greater than 1.9, as reflected in Claim 23 as-amended.

The cited references do not teach or suggest the claimed invention.

US 847 is directed to corona treated polyolefin molded articles including an antibacterial agent. US 847 cautions that the incorporation of antibacterial agents is expensive and can affect the physical properties of the resulting articles. (Col. 2, lines 3 – 6). Consequently, the impetus of US 847 is the use of corona treatment to increase the activity of antibacterial agents, thereby allowing use of lesser amounts of antibacterial agents. (Col. 2, lines 15 – 25). In contrast to the urgings of the Office Action on Page 9, US 847 expressly teaches that the moderate amount of antibacterial agents used within its invention do not have antibacterial activity alone; i.e in the absence of corona treatment. (Col. 6, lines 5 – 17, TABLE 1, particularly Comparative Ex. 1 and Comparative Ex. 2). US 847 merely discloses polyolefin compositions, which may be used to form "molded articles," such as containers. (Col. 1, lines 10 – 15).

US 847, directed to polylefin containers, does not teach or suggest the inventive anti-microbial food casings, much less such food casings incorporating a layer comprising an antimicrobially active amount of at least one metal salt and polyamide and/or copolyamide, as recited in the claims as-amended. Applicant respectfully submits that US 847 and the claimed invention are thus not formed from "the same material," as asserted in the outstanding Office Action on Page 9. Applicant further respectfully submits that the antimicrobial properties of the polyolefin compositions of US 847 can not be imputed to the inventive food casings incorporating polyamide and/or copolyamide.

And US 847 most certainly does not teach or suggest the recited antimicrobial food casings in which the metal salt is present in an amount ranging from about 0.005 to 2.0% by weight and the casing has not been subjected to an anti-microbial after-treatment, as recited in Claim 24 as-amended. US 847 instead clearly indicates that an after-treatment would be required to impart antimicrobial properties to articles incorporating such modest amounts of antimicrobial agent, as expressly indicated in US 847's Comparative Examples 1 and 2. Applicant further respectfully submits that the outstanding Office Action's statements regarding the effectiveness of alternative, untested, antimicrobials noted within US 847 are pure conjecture.

Applicant additionally respectfully reiterates that to modify US 847 so as to avoid its required after-treatment, i.e. its corona treatment, would render it unfit for its intended purpose. MPEP 2143.01 (citing *In re Gordon*, 221 USPQ 1125 (Fed. Cir. 1984)). Although the outstanding Office Action at Page 10, Ref. No. 36 indicates that US 847 is not "cited" for its corona treatment, Applicant respectfully submits that the entire impetus of US 847 is the use of corona treatment to provide antimicrobial activity to polyolefin compositions, as indicated by its Comparative Examples 1 and 2.

Nor does US 847 teach or suggest such food casings exhibiting a bacteriostatic activity of greater than 1.9, as recited in Claim 23.

Accordingly, Applicant respectfully submits that the claimed invention is patentable in light of US 847, considered either alone or in combination with the remaining art of record.

Claims 3 through 6, 10, and 19 are likewise patentable over US 847 in view of US 920.

US 920 is directed to multi-layered casings having excellent water vapor and oxygen barrier properties and low adhesion to protein-based foodstuffs. (Col. 4, lines 15 – 19). The casings of US 920 have a specific layer structure incorporating various functionalities. (Col. 4, lines 36 – 40 and 19 – 33). US 920 generically notes that "additives" may be present to improve processing or opening. (Col. 6, lines 23 – 25). US 920 is silent as to antimicrobial properties, however.

There would have been no motivation to have combined these references. US 847 is generally directed to corona treatments to increase the antimicrobial properties of polyolefin containers. US 920 is generally directed to casing structures and compositions imparting a combination of water vapor barrier, oxygen barrier, and low adhesion. These are altogether different endeavors and problems solved.

However, even if US 847 and US 920 were combined (which Applicant did not do), the claimed invention would not result.

Particularly, the combination of US 847 and US 920 does not teach or suggest the inventive anti-microbial food casings incorporating polyamide and/or copolyamide in which the antimicrobial properties are imparted to the food casing by the metal salt, as recited in the claimed invention.

Accordingly, Applicant respectfully submits that Claims 3 through 6, 10 and 19 are patentable over US 847 and US 920, considered either alone or in combination.

Claim 17 is likewise patentable over US 847 in view of US 920 and US 316.

US 316 is directed to methods to make perforated casings using a "presticker apparatus." (Col. 2, lines 23 – 27 and Col. 3, line 65). The films of US 316 are generally fibrous materials formed by saturating a paper web. (Col. 3, lines 20 – 25). US 316 generically notes that food casings may be pre-moisturized. (Col. 3, lines 40 – 44). US 316 is silent as to the composition of its webs, other than indicating that paper webs are used to form its casings.

There would have been no motivation to have combined these references. US 847 is generally directed to corona treatment to increase the antimicrobial properties of polyolefin containers. US 920 is generally directed to casing structures and compositions imparting a combination of water vapor barrier, oxygen barrier, and low adhesion. US 316 is directed to methods to make perforated casings using a "presticker apparatus." These are altogether different endeavors and problems solved.

However, even if US 847, US 920 and US 316 were combined (which Applicant did not do), the claimed invention would not result.

Particularly, the combination of US 847, US 920 and US 316 does not teach or suggest the inventive anti-microbial food casings incorporating polyamide and/or copolyamide in which the antimicrobial properties are imparted to the food casing by the metal salt, as recited in the claimed invention.

Accordingly, Applicant respectfully submits that Claim 17 is likewise patentable over US 847, US 920 and US 316, considered either alone or in combination.

Claims 20 through 22 are also patentable in light of US 847 and JP 923.

JP 923 is directed to multi-layered antimicrobial polyester films including A and B layers. The antimicrobial agent is an inorganic compound. [0060]. The antimicrobial may be included in the polyester film or used as a coating. Coating binders include polyester, acrylic and urethane. [0011]. The films of JP 923 may be incorporated into labels, face plates and the like. [0013]. JP 923 is silent as to masterbatches. JP 923 does, however, note that at modest amounts of antimicrobial-agents antibacterial-effects "can not be expected" and further that antimicrobial amounts of greater than 10 % causes breaks. [0009].

There would have been no motivation to have combined these references. US 847 is directed to polyolefin molded articles. JP 923 is directed to polyester films. These are altogether different endeavors.

However, even if US 847 and JP 923 were combined (which Applicant did not do), the claimed invention would not result.

Particularly, the combination of US 847 and JP 923 does not teach or suggest the inventive methods of forming anti-microbial food casings incorporating polyamide and/or

copolyamide in which the antimicrobial properties are imparted to the food casing by the metal salt, as recited in the claimed invention.

And the combination of US 847 and JP 923 most certainly does not teach or suggest such methods incorporating masterbatches containing up to 40% by weight of antimicrobially active metal salt, as further recited in Claim 20. JP 923 instead expressly teaches away from films containing more than 10% inorganic compound.

Accordingly, Applicant respectfully reiterates that Claims 20 through 22 are patentable in light of US 847 and JP 923, considered either alone or in combination.

CONCLUSION

It is respectfully submitted that Applicant has made a significant and important contribution to the art, which is neither disclosed nor suggested in the art. It is believed that all of pending Claims 1, 2 and 4 through 24 are now in condition for immediate allowance. It is requested that the Examiner telephone the undersigned if any questions remain to expedite examination of this application.

It is not believed that extensions of time or fees are required, beyond those which may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time and/or fees are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required is hereby authorized to be charged to Deposit Account No. 50-2193.

Respectfully submitted,

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